

REMARKS:

This application has been carefully studied and amended in view of the Office Action dated August 3, 2004. Reconsideration of that action is requested in view of the following.

At the outset it is observed that the rejections in the Office Action of August 3, 2004, subsequent to the opinion by the Board of Appeals were quite surprising.(1) In that regard, certain objections were raised to the drawings which had actually been addressed during earlier prosecution.(2) Moreover, there have been seven Office Actions prior to the present Office Action of August 13, 2004. Yet, the present Office Action rejects the claims as unpatentable over prior art that had been cited in the third Office Action (November 29, 1999) and was consistently deemed less pertinent than the prior art subsequently relied upon in the further Office Actions and which was the basis of the final rejection that was appealed.(3) In addition, the present Office Action raises Section 112 matters. However, the specification has remained the same throughout the prosecution and the claims have been essentially the same. Some of these present 112 rejections are similar to the 112 rejection in the final rejection that was appealed, but the Board of Appeals did not affirm the examiner in that rejection. To the extent the Section 112 rejections may differ from what was raised before the Board of Appeals, it is puzzling why those rejections were not previously raised in any of

the other seven Office Actions or raised sua sponte by the Board of Appeals.

In any event, the objections and rejections in the Office Action of August 13, 2004, have been carefully considered and this amendment is a sincere effort to address each of those matters so that the application can be passed to issue.

In paragraph one of the Office Action the drawings are objected to because the right side of Figure 2 contains a reference line without a number. In paragraph 2 of the Office Action the drawings were objected to as failing to show the first alignment mark and the second alignment mark. With regard to these objections, the drawings were previously amended and the drawings which were resubmitted on September 8, 1999, deleted the reference line without a number and added the reference numeral 52 for the alignment marks. The present replacement sheet includes these changes.

In paragraph three of the Office Action the drawings were objected to as failing to include the reference numeral "52". As noted above that reference numeral had been added in the drawings which were resubmitted on September 8, 1999. The reference numeral 52 is also in the present replacement sheet.

The present drawing replacement sheet also includes reference numeral 53 for the punch extension which has been referred to on page 9 of the specification. The drawing replacement sheet further

includes schematically the structure for rotating the dies indicated by the reference numeral 55 and the structure for rotating the housings indicated by the reference numeral 56 which is in the paragraph added to page 17 of the specification.

Reconsideration is respectfully requested of the objection to the specification and of the rejection of the claims under 35 USC 112 as being nonenabling. Page 17 of the specification has been amended based upon prior portions of the specification including the drawings (note in particular pages 10-11 and 13-15) to summarize the invention. As pointed out, the intent of the invention is to obtain the best possible or optimum match and alignment of the upper and lower die apertures from a selection of dies. The need for this is the realization that in manufacturing processes, where there are tolerances, precise alignment would not likely result. During this selection and aligning procedure the specification points out, as an example, that the upper die located in the upper passage would extend partially into the lower passage in the lower housing. The punch tip 24 would be inserted through the upper die aperture 40 and advanced into the lower die receiving passage or aperture 50. In accordance with the invention during this procedure one or both dies would be rotated to select the optimum alignment for permitting the punch tip to pass through the dies with the least amount of frictional or interference forces from the walls of the punch receiving apertures 40,50. When this

optimum alignment is achieved the relative position of the dies 25,26 at this optimum position is recorded by providing at least one mark on each of the dies. This enables such optimal positioning to be recreated when there is alignment of these marks. The selection and alignment procedure could take place when the punch and both dies are mounted in the punch and die assembly and then assume their normal operating position similar to what is illustrated in Figure 1.

The specification points out that there is a tight clearance or snug fitting of each die in its passageway. As an example, such snug or tight fitting is stated as being about 0 to about 10 millionths of an inch. As a result of this tight clearance or snug fitting each die can be rotated but then remains in whatever position it had been rotated. An alternative procedure would be that, instead of rotating the dies, the die housings and their apertures could be rotated.

Based upon the above teachings and guidelines there is clearly a sufficient disclosure in the specification that would enable one of ordinary skill in the art to practice the invention. As stated in Hyatt v. Boone, 146 F.3d 1348 (Fed. Cir. 1998) "This court has often observed that minutiae of descriptions or procedures perfectly obvious to one of ordinary skill in the art yet unfamiliar to laymen need not be set forth". It has long been held that "The function of the description requirement is to ensure that

the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by him; how the specification accomplishes this is not material".

In re Wertheim, 341 F. 2d 257 (CCPA 1976)

In paragraph four of the Office Action specific objections were made to the specification. One of these is that "It is unclear how the aperture of the upper die and the punch receiving passage of the lower die will ever be aligned". It is noted that as indicated above there would be initially general alignment, but not precise concentricity. As a result, optimal alignment is achieved by the claimed rotation which could be rotation of either the dies or the housings. It is also noted that this issue was one of the matters raised in the rejections on appeal which had been reversed by the Board.

Another objection stated in paragraph four of the Office Action is that "It is unclear how the upper and lower die receiving passages are configured to permit the rotation of the upper and lower dies". In response, it is noted that page 10 of the specification points out that the die receiving passages and the dies have cylindrical cross-sections. This, of course, would permit rotation even where there is a snug fitting of the dies in their passages. It is again pointed out that this issue was part of the matters raised on appeal.

A further objection in paragraph four of the Office Action is

"It is unclear how the upper and lower dies are rotated". If, by this objection, the Examiner is questioning the structure for such rotation it is pointed out that specific means for accomplishing such rotation is not important to the invention. Any suitable means which would be apparent to one of ordinary skill in the art could be used. What is important is that the dies have the capability of being rotated. Such rotation could be achieved while the dies are in the receiving passages (page 10, lines 8-12), or within an alignment apparatus (page 14, lines 2-6), or the rotation could be achieved where the dies are in the housings either before or after being in the punch assembly (page 13, line 15 to page 14, line 10). This is analogous to comments by Examiner Dexter in the Examiner's Answer where at page 18 Examiner Dexter represented to the Board of Appeals with regard to the prior art Kranik patent "It is emphasized that how the die is permitted to rotate in the die passage is not important, only that the second die passage is configured to permit at least one of the first and second dies to rotate therein".

A further objection raised in paragraph four of the Office Action is "It is unclear how the upper and lower housings rotate". Again, as stated above, the specification makes clear that rotation of the housings is one alternative for creating the optimal alignment. The specific means for accomplishing this rotation is not important to the practice of the invention, since any suitable

means could be used which would be clearly apparent to one of ordinary skill in the art.

Another objection raised in paragraph four of the Office Action is "It is unclear how the dies are marked and how the marks are used". In response, the Examiner's attention is directed to the discussion at page 16, line 22 to page 17, line 6 of the specification. As pointed out therein, "The marking could include any suitable marking. For example, the marking could include a mark formed with a writing instrument. Other markings could include something adhesively adhered to the upper die and the lower die. Other satisfactory markings methods may also or alternatively be employed." As also stated in the specification once the marks are made they are used to assure proper alignment by providing the ability to recreate the alignment. See page 13, lines 4-14.

A further objection raised in paragraph four of the Office Action is "It is unclear how the work piece is loaded". Here again, the objection raised by the examiner is not a critical part of the invention. Any suitable means may be used for loading the work piece. The Examiner's attention is directed, for example, to Figure 1 of this application which illustrates the prior art assembly and includes the work piece or substrate 21 being loaded in position. The same techniques could be used in the practice of this invention. As pointed out at page 6, lines 7-11 of the specification, for the punching operation the upper and lower

housings are placed in close proximity to each other and a substrate is arranged between the upper housing and its upper die and the lower housing and its lower die.

A further objection raised in paragraph four of the Office Action is "It is unclear if the dies are held in their respective housings". In response it is pointed out that during the punching operation the dies would be in their housing as is conventionally practiced. Page 14, lines 11-22, however, point out that "prior to alignment, the upper die may be inserted into the die receiving passage in the lower housing and/or the lower die may be inserted in the die receiving passage of the upper housing to ensure proper fit of the dies in those passages as well." Figure 2 illustrates one of those alternatives where for alignment purposes the upper die extends partially into the lower housings. Once, however, the alignment is optimized the dies and their housings assume the normal relationship as is conventionally practiced in the art. It is noted that this objection is embraced in the issues on appeal.

A final objection raised in paragraph four of the Office Action is "It is unclear how the dies remain in their rotated position". As discussed above there is a tight clearance or snug fitting of the dies in their passages. Note the discussion at page 13, lines 18-22 which points out that "the dies may be matched to die receiving passages in upper and lower housings so as to have a space between the outer surface of the die and the inner surface of

the die receiving passage between about 0 and about 10 millionths of an inch". This explanation is supported by observations of Examiner Dexter. In that regard, in response to arguments made by applicant in his Appeal Brief, Examiner Dexter in the Office Action of April 23, 2002, pointed out "While one having ordinary skill in the art may have assumed in reading applicant's disclosure that the fit between the dies and housings would be provided by a pressure/friction fit, for example, a light pressure fit which allows for such rotational and sliding movement but still maintains the dies in a desired location/orientation for operational purposes..."

In paragraph seven of the Office Action it is stated "It is unclear how the aperture of the upper die and the punch receiving passage of the lower die will ever be aligned". Paragraph seven then refers to Figure 2. Figure 2 as original presented may have possibly created some confusion in the illustration of the cutting surface 48 which is shown as being on the right hand portion of the lower die passage 50, but not on the left hand portion when, of course, the cutting surface would extend completely around the passage. Since the cutting surface is not a critical part of this invention, in order to avoid any such possible confusion, the cutting surface and the reference numeral have been omitted from the replacement sheet of Figure 2. Similarly, page 12 of the specification has been amended to delete reference to "48". As

regards the questioning of how the upper die and punch receiving passage of the lower die will ever be aligned it is again pointed out that the invention is based upon the realization that in actual practice because of tolerances in manufacturing processes while there is initially a nominal or general alignment, a more precise or optimal alignment can be achieved by rotating the die receiving apertures. Accordingly, even if both apertures are nominally along the same center line or axis the degree of alignment would vary in accordance with the relative rotational position of the apertures.

Paragraph eight of the Office Action questions how the upper and lower die receiving passages are configured to permit rotation of the dies and how the dies actually rotate and further what structure would allow such rotation. These matters have been discussed in detail above. In general, both the dies and their passages would be of nominal circular cross-section which would permit the rotation and, given the teaching to effect such rotation, the specific means for accomplishing this are not part of the invention and any suitable means apparent to one of ordinary skill in the art could be used. What is important is that there is some ability or means to effect the rotation.

Paragraph nine of the Office Action questions how the upper and lower housings rotate and what structure accomplishes this rotation. This again, has been previously addressed. Figure 2 has been amended to schematically illustrate the structure.

Paragraph ten of the Office Action questions how the dies are marked and how the die are used. Again, this matter has been previously addressed. Page 16, line 22 to page 17, line 6 discusses examples of how the dies are marked. The use of the marking is to provide the ability to recreate the optimal alignment. See page 13 lines 4-9. What specific means is used to assure the realigning of the marks is not critical to the invention and any suitable means apparent to one of ordinary skill in the art, given the teachings and guidelines of this invention, could be used.

Paragraph 11 of the Office Action questions if the dies are held in their housings and how the work piece is loaded. In addition, Examiner Prone questions what structure keeps the dies in their respective receiving passage and if the housings move vertically toward and away from each other whereupon would the dies travel with the housings. Some of these questions may be triggered by Figure 2 illustrating the upper die being in the lower die passage. As discussed in the specification, however, this condition results during the aligning process. When, however, the substrate or work piece is loaded each die would be in its own housing similar to what is illustrated in Figure 1. Various matters raised in this paragraph are also discussed in more detail above.

In paragraph 12 of the Office Action claim 11 is stated as not

having support in the specification for the "compressible spring engaging the punch and the second housing". Claim 11 has now been amended to delete reference to "and either the first housing or second housing, thereby". As a result, Claim 11 now refers to "a compression spring engaging the punch for biasing the punch to a retracted position". This is illustrated in Figure 2. Moreover the replacement page for Figure 2 adds the reference numeral 53 which has been added to page 9 of the specification as being an extension of the punch 27 and housing 32.

Paragraph 13 of the Office Action questions how the dies remain in their rotated position. As previously pointed out the tight clearance or snug fitting of each die in its passage permits rotation of the die yet because of this tight clearance or snug fitting the dies then remain in their rotated position.

In Paragraph 16 of the Office Action with regard to parent claims 1 and 6 it is questioned as to what structure allows for rotation of the dies. This has been previously addressed.

Paragraph 17 of the Office Action questions claims 4 and 9 regarding what structure creates the first and second alignment marks and what structure uses the alignment marks to align the first and second dies. This has also been previously addressed.

Paragraph 18 of the Office Action with regard to claims 21 and 22 questions how the upper and lower housings rotate. This has also been previously addressed.

Reconsideration is respectfully requested of the rejection of claims 1-3, 5-8 and 10 as anticipated by Borello. Parent claims 1 and 6 have been amended to more clearly define the invention. Claims 25-28 have been added to complete the claim coverage. Claims 25 and 27 are dependent on claim 1 and claims 26 and 28 are dependent on claim 6. Accordingly, these claims fall within the elected invention and should be examined. In view of the four additional claims the Commissioner is authorized to charge Deposit Account No. 03-2775 for the supplemental fee regarding these claims.

The reliance on Borello for rejecting the claims is somewhat surprising. Borello had been cited in the Office Action of November 29, 1999. Nevertheless, in that Office Action and in the subsequent three Office Actions, the Kranik patent was considered by the Examiner as being the most pertinent prior art. The Board of Appeals nevertheless considered applicant's invention to be patentable over Kranik, the most pertinent prior art. Apparently, Examiner Prone now views Borello as being pertinent in that Examiner Prone considers Borello to disclose the capability of rotating the die passages. What Borello actually illustrates and describes is a set of three die plates 12, 14 and 16. The male punch members are mounted in die plate 12. Die plate 14 includes guide members 58 for the male punch members, Die plate 16 includes female punch members 62. Col. 4, lines 7-35 describe in greater

detail the guide members 58 and female punch member 62. As described therein and as illustrated particularly in Figure 6 each of the guide members 58 is threadably engaged in its die plate 14. Figure 6 illustrates the upper surface of guide member 58 to be flush with the upper surface of plate 14 and the lower surface of guide member 58 to be flush with the lower surface of plate 14. This flushness would be important in the sense that the intermediate guide plate 14 functions as a stripping guide plate which is in surface to surface contact with the material M. Borello also discloses the female punch members 62 to be threadably disposed in threaded through bores 64 in the stationary guide plate 16. As illustrated in exaggerated form in Figure 6 and as described in col. 4, lines 25-30 the upper portion of each of the female members 62 extends slightly above the upper surface of the stationary die plate 16. The use of threaded engagement as the mounting structure for the guide members 58 in plate 14 and the female members 62 in plate 16 would thus be important to achieve the purpose of creating a vertical relationship, i.e. "to threadably adjust each of the female members 62 so that the upper portion thereof extends slightly above the upper surface 72 of the stationary die plate 16".

The Borello threaded vertical adjustability has nothing to do with attempting to achieve a rotational adjustment for aligning the upper and lower die apertures as with the present invention. In

that regard, Figure 2 clearly illustrates the smooth inner surfaces of the die passages and the smooth outer surfaces of the dies that would permit a rotational movement which necessarily would not have to result in any vertical movement nor would any vertical movement be desired during the aperture aligning process. Accordingly, the use of a threaded engagement as in Borello distinctly differs in structure and function from the use of smooth bore die passages as with the present invention. In order to highlight this difference parent claims 1 and 6 have been amended to define the die passages as being of smooth bore. Page 12 of the specification has also been amended to describe by words what is clearly illustrated in Figure 2 and which would necessarily result from the remainder of the specification in its context of describing the rotation that is used in order to effect alignment.

In view of the above parent claims 1 and 6 should clearly be patentable over Borello.


Dependent claim 11 was rejected as unpatentable over Borello in view of Blais which was also cited in the Office Action of November 29, 1999, but not applied in the appealed final rejection. Since Blais was relied upon in the present Office Action with regard to the compression spring feature of claim 11, Blais does not overcome the deficiencies of Borello.

Although claims 23-24 have been withdrawn from examination these claims are dependent on claims 1 and 6, respectively.

Accordingly if claims 1 and 6 are allowed claims 23 and 24 should also be allowed.

In view of the above remarks and amendments this application should be passed to issue.

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